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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,899	11/13/2003	Joun Ho Lee	8733.275.20-US	6109

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EXAMINER
NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
2871	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/705,899	LEE ET AL.	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 24-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 24-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's arguments with respect to the amended claim 1 with the new feature of "auxiliary electrode line" based on the Response filed on 02/26/2008 have been considered but are moot in view of the new ground(s) of rejection. Therefore, this is non-Final action.

Claims 2-23 are cancelled. Claims 1 and 24-32 are still pending.

Applicants submitted the English translation of the priority filed on 7/31/1999 overcoming the reference of Lee et al. (US 6680769), which is replaced by **Kim et al. (US5767926A).**

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

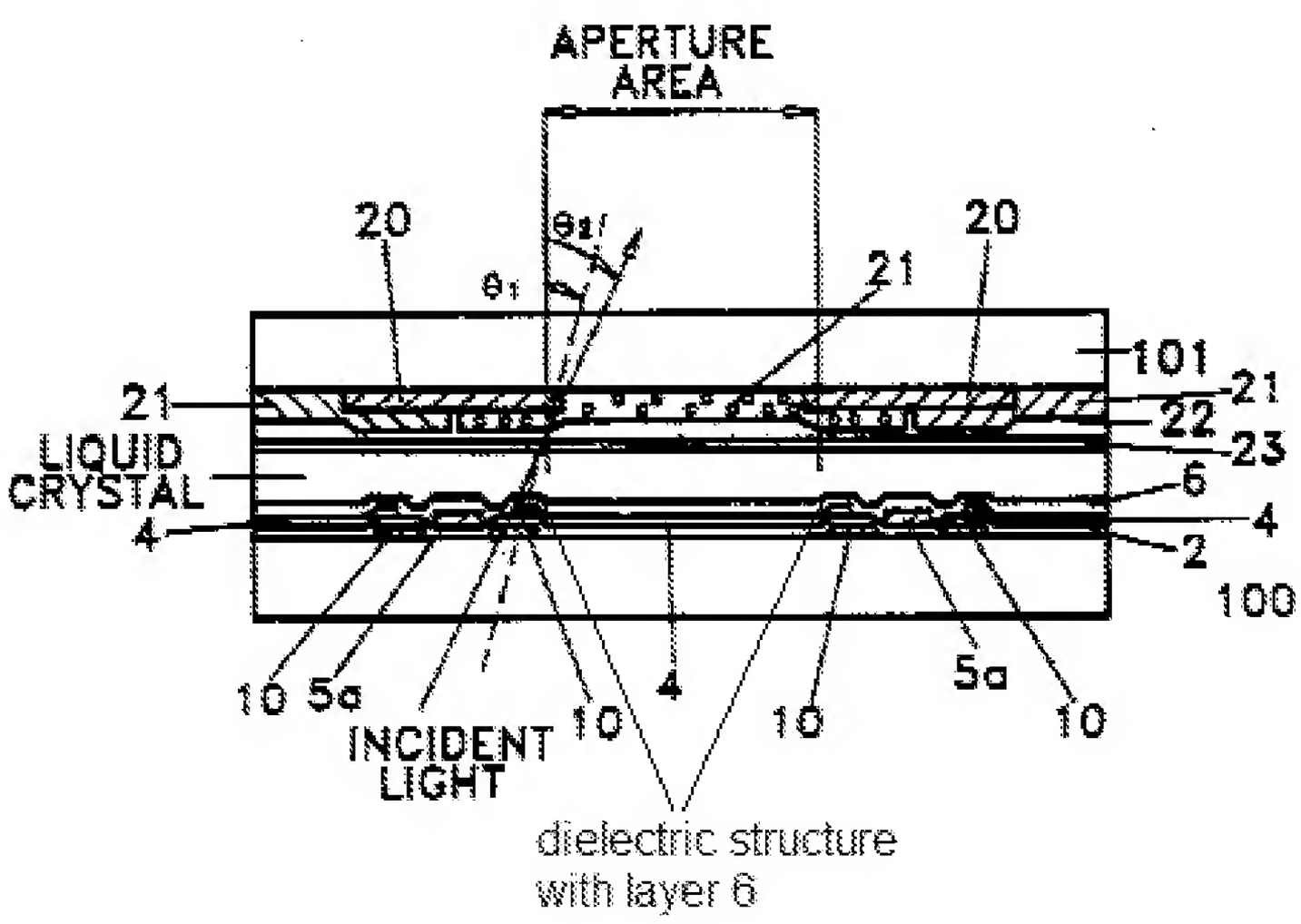
> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by **Kim et al. (US5767926A)**.

In regard to claim 1, Kim et al. disclose (Figs. 3G-J) a multi-domain liquid crystal display device comprising:

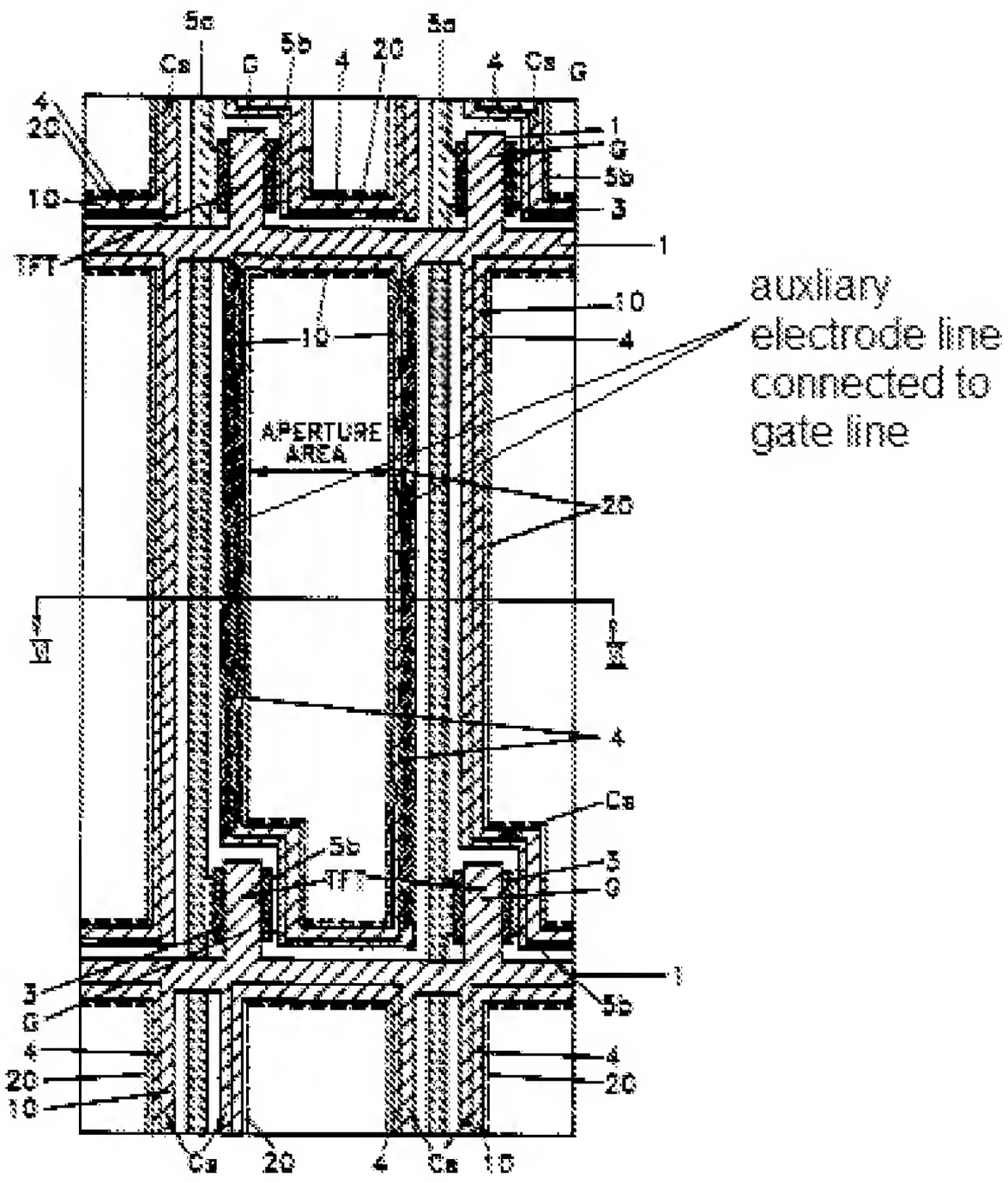
- first and second substrates ;

- a liquid crystal layer between the first and second substrates;
- a plurality of data lines 5a for applying a data signal on the first substrate;
- a plurality of gate lines 1 for applying a gate signal, the gate lines crossing the data lines to define a plurality of pixel regions, wherein each pixel region has a multi-domain structure which includes a dielectric structure (layer 6 made of silicon nitride);



- a thin film transistor near each crossing of the gate lines and the data lines;
- a common electrode 17 on the second substrate;
- a pixel electrode 13 connected to a drain electrode of the thin film transistor in each pixel region; and
- an auxiliary electrode line 15 electrically connected to at least one of the common lines in each pixel region, the auxiliary electrode line and the multi-domain structure distorting an electric field applied between the common electrode and

the pixel electrode to thereby form at least two domains in each pixel region during an operation of the multi-domain liquid crystal display,



wherein

- the auxiliary electrode line is formed between the pixel electrode and the data line at an outside of the pixel electrode in the pixel region and the auxiliary electrode is not overlapped with the data line.

Claim 32:

- the auxiliary electrode line is formed in the same layer as the gate lines.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al. (US5767926A)** as applied to claims 1 and 32 in view of Takatori et al. (US6504592B1).

Kim et al. fail to disclose the common electrode including an opening area.

Takatori et al. teach the common electrode including an opening area.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the common electrode including an opening area for obtaining synergistic effect (col. 34 lines 1-3) as Takatori et al. taught.

2. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al. (US5767926A)** as applied to claims 1 and 32 in view of Takeda et al. (US 6724452 B1).

Kim et al. fail to disclose a dielectric structure 53 on the second substrate.

Takeda et al. teach a multi-domain liquid crystal display device with a dielectric structure (dielectric protrusion) on the second substrate as domains regulating means for providing the ion adsorption capacity to the dielectric structure.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as **Kim et al.** disclosed with a dielectric structure (dielectric protrusion) on the second substrate as domains regulating means for providing the ion adsorption capacity to the dielectric structure as taught by Takada et al. (col. 73 lines 10-17).

3. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al. (US5767926A)** as applied to claims 1 and 32 in view of Yamamoto et al. (US5657100A).

Kim et al. fail to disclose the liquid crystal layer having a negative or positive dielectric anisotropy.

Yamamoto et al. teach a liquid crystal display device wherein the liquid crystal layer has a positive dielectric anisotropy for obtaining high contrast ratio (col. 5 lines 22-31) or the liquid crystal layer has negative dielectric anisotropy for obtaining low contrast ratio (col. 7 lines 14-21).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as **Kim et al.** disclosed with the liquid crystal layer has a positive dielectric anisotropy for obtaining high contrast ratio as taught by Yamamoto (col. 5 lines 22-31)

or the liquid crystal layer has negative dielectric anisotropy for obtaining low contrast ratio as taught

by Yamamoto(col. 7 lines 14-21).

4. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al. (US5767926A)** as applied to claims 1 and 32 in view of Shimada (US5710609A).

Kim et al. fail to disclose the liquid crystal layer includes a chiral dopant.

Shimada teaches the liquid crystal layer including a chiral dopant.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the liquid crystal layer including a chiral dopant for adjusting the twist pitch (col. 4 lines 54-55) as Shimada taught.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al. (US5767926A)** as applied to claims 1 and 32 in view of Kim et al. (US6335776B1).

Kim et al. fail to disclose a phase-differential film on at least one of the first and second substrates, wherein the phase-differential film includes a negative uniaxial film or the phase-differential film includes a negative biaxial film.

Kim et al. (US6335776B1) disclose a multi-domain liquid crystal display device with the phase differential film includes a negative uniaxial film for compensating effectively the right-left viewing-angle by widening the area without gray inversion, increasing contrast ratio in an inclined direction (col. 9 lines 53-60) or a negative biaxial

film for obtaining wider viewing-angle characteristics as compared with the negative uniaxial film (col. 9 lines 61-67).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the phase differential film includes a negative uniaxial film for compensating effectively the right-left viewing-angle by widening the area without gray inversion, increasing contrast ratio in an inclined direction (col. 9 lines 53-60) or a negative biaxial film for obtaining wider viewing-angle characteristics as compared with the negative uniaxial film (col. 9 lines 61-67).

6. Claim1, 25-27 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US6356335B1) in view of Sukenori et al. (US5943106A).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

In regard to claim 1, Kim et al. disclose (Figs. 5-11) a multi-domain liquid crystal display device comprising:

- first and second substrates 31/33;
- a liquid crystal layer between the first and second substrates;
- a plurality of data lines 3 for applying a data signal on the first substrate 10;
- a plurality of gate lines 1 for applying a gate signal, the gate lines crossing the data lines to define a plurality of pixel regions, wherein each pixel region has a multi-domain structure which includes a dielectric structure 53 or slit 51;

  a thin film transistor near each crossing of the gate lines and the data lines;
- a common electrode 17 on the second substrate;
- a pixel electrode 13 connected to a drain electrode of the thin film transistor in each pixel region; and
- an auxiliary electrode line 27 electrically connected to at least one of the common lines in each pixel region, the auxiliary electrode line and the multi-domain structure distorting an electric field applied between the common electrode and the pixel electrode to thereby form at least two domains in each pixel region during an operation of the multi-domain liquid crystal display,

wherein

- the auxiliary electrode line is formed between the pixel electrode and the data line at an outside of the pixel electrode in the pixel region and the auxiliary electrode is not overlapped with the data line.

Claim 25:

- a dielectric structure 57 on the second substrate.

Claims 26-27:

- the liquid crystal layer has a negative or positive dielectric anisotropy.

Claims 29-31:

- a phase-differential film on at least one of the first and second substrates, wherein the phase-differential film includes a negative uniaxial film or the phase-differential film includes a negative biaxial film.

Claim 32:

- the auxiliary electrode line 27 is formed in the same layer as the gate lines (col. 4 lines 49-50).

However, Kim et al. fail to disclose the auxiliary electrode line electrically connected to at least one of the gate lines in each pixel region.

Sukenori et al. teach the auxiliary electrode line electrically connected to at least one of the gate lines in each pixel region.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the auxiliary electrode line electrically connected to

at least one of the gate lines in each pixel region for improving display characteristics due to gate line instantaneously applied with pulse voltage as Sukenori et al. taught.

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US6356335B1) in view of Sukenori et al. (US5943106A) as applied to claims1, 25-27 and 29-32 in further view of Takatori et al. (US6504592B1).

Kim et al. fail to disclose the common electrode including an opening area.

Takatori et al. teach the common electrode including an opening area.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the common electrode including an opening area for obtaining synergistic effect (col. 34 lines 1-3) as Takatori et al. taught.

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US6356335B1) in view of Sukenori et al. (US5943106A) as applied to claims1, 25-27 and 29-32 in further view of Shimada (US5710609A).

9. Kim et al. fail to disclose the liquid crystal layer including a chiral dopant.

Shimada teaches the liquid crystal layer including a chiral dopant.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display

device as Kim et al. disclosed with the liquid crystal layer including a chiral dopant for adjusting the twist pitch (col. 4 lines 54-55) as Shimada taught.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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/Andrew Schechter/
Primary Examiner, Art Unit 2871